AMENDMENTS

Please amend the claims as follows:

1.   (currently amended) A method for automatic optimization in spectral Doppler
ultrasound imaging, the method comprising:

      (a)   firing at least first and second sequences of spectral Doppler pulses;

      (b)   determining at least first and second goal values in response to the first and
second sequences, respectively;

      (c)   estimating a change of a spectral Doppler parameter ~~as a function of~~ from the
first and second goal values; and

      (d)   automatically setting the optimal spectral Doppler parameter as a function of
the estimated change;

      wherein (a) comprises transmitting the first sequence in response to a first setting of
the spectral Doppler parameter and transmitting the second sequence in response to a second
setting of the spectral Doppler parameter, the first setting different than the second setting,
and (d) comprises automatically setting the spectral Doppler parameter at a third setting the
same or different than one or both of the first and second settings.

2.   (original) The method of Claim 1 wherein (c) comprises estimating the change of the
spectral Doppler parameter selected from the group of: transmit frequency, gate position,
filter setting, Doppler gain, angle of scan line for a gate position and combinations thereof
and (d) comprises automatically setting the spectral Doppler parameter selected from the
group above for (c).

3.   (original) The method of Claim 2 wherein (c) comprises estimating the change of the
gate position and wherein (d) comprises automatically setting the gate position.

4.   (original) The method of Claim 2 wherein (c) comprises estimating the change of the
Doppler gain and wherein (d) comprises automatically setting the Doppler gain.

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5.   (original) The method of Claim 2 wherein (c) comprises estimating the change of the filter setting and wherein (d) comprises automatically setting the filter setting.

6.   (original) The method of Claim 1 wherein (b), (c) and (d) comprise numerically optimizing the spectral Doppler parameter without full sampling of a one or higher dimensional region.

7.   (original) The method of Claim 1 further comprising:

        (e)   generating a spectral Doppler display in response to the spectral Doppler parameter set in act (d).

8.   (original) The method of Claim 1 wherein (c) comprises estimating a vector corresponding to two different spectral Doppler parameters and (d) comprises setting both spectral Doppler parameters as a function of the vector.   -

9.   (cancelled)

10.   (original) The method of Claim 1 wherein (b) comprises determining the first and second goal values as spectral intensity sums.

11.   (original) The method of Claim 1 wherein (b) comprises determining the first and second goal values as spectral signal-to-noise sums.

12.   (original) The method of Claim 1 wherein (b) comprises determining each of the first and second goal values over at least a one heart cycle period, the first goal value corresponding to a different heart cycle than the second goal value.

13-18. (cancelled)

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19.   (previously presented) A method for automatic optimization in spectral Doppler ultrasound imaging, the method comprising:

(a)   firing at least one Doppler pulse into an identified region;

(b)   automatically setting transmit frequency, filter settings or combinations thereof in response to an echo signal from (a); and

(c)   estimating a first setting from previous settings;

wherein (b) comprises automatically setting as a function of the estimated first setting.

20.   (cancelled)

21.   (previously presented) A system for automatic optimization in spectral Doppler ultrasound imaging, the system comprising:

a transducer operative to fire at least first and second sequences of spectral Doppler pulses; and

a processor operative to determine at least first and second values in response to the first and second sequences, respectively, estimate a change of a spectral Doppler parameter as a numerical optimization_function of the first and second values, and automatically set the spectral Doppler parameter as a function of the estimated change.

22.   (original) The system of Claim 21 wherein the processor is operative to estimate the change by adaptively generating zero or more of iterations of acts which include one or more of: generating intermediate spectral Doppler parameter setting based on the preceding calculated values, to instruct the transducer to fire the corresponding sequence of spectral Doppler pulses and compute the intermediate goal value, and to automatically set the optimal spectral Doppler parameter value based on the preceding calculated values.

23.   (original) The method of Claim 1 wherein (c) comprises adaptively performing zero or more iterations of the following acts based on the first and second goal values;

(c1)   generating an intermediate spectral Doppler parameter setting based on previous calculated goal values;

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(c2)   firing a sequence corresponding to the intermediate spectral Doppler
parameter; and

(c3)   calculating a third goal value in response to the sequence; and

wherein (d) comprises automatically setting the optimal spectral Doppler parameter
based on the preceding calculated goal values.

24.   (cancelled)

25.   (original) A method for automatic optimization in spectral Doppler ultrasound
imaging, the method comprising:

(a)   firing at least first and second sequences of spectral Doppler pulses;

(b)   determining at least first and second goal values in response to the first and
second sequences, respectively;

(c)   adaptively performing zero or more iterations of the following acts based on
the first and second goal values;

(c1)   generating an intermediate spectral Doppler parameter setting based on
previous calculated goal values;

(c2)   firing a sequence corresponding to the intermediate spectral Doppler
parameter; and

(c3)   calculating a third goal value in response to the sequence; and

(d)   automatically setting an optimal spectral Doppler parameter based on the
preceding calculated goal values.

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